NOVEMBER, 1910.

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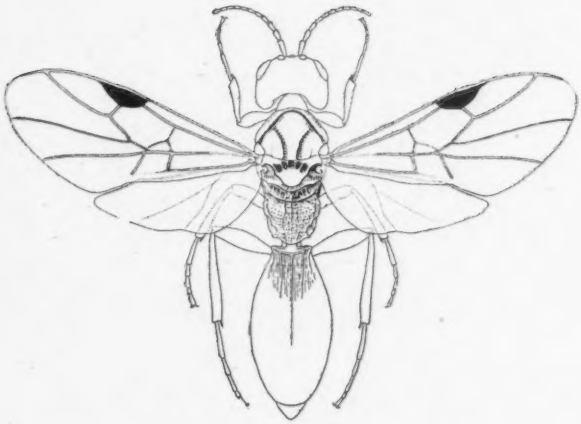
Vol. XXI. No. 9



Vanhornia eucnemidarum Crawford.

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Desiderata of North American Carabidæ

81a, 87a, 106*, 07*, 08, 09, 11, 13*, 15, 17*, 19a, 23a, 23b, 26, 31, 41, 44, 47, 48*, 51*, 54, 58, 61, 62, 63, 66*, 68*, 70*, 71, 75, 80*, 81, 82, 85*, 86*, 87*, 89*, 90, 96, 202, 03, 04, 09, 16*, 23, 29, 36, 38, 45, 46*, 47*, 49*, 50*, 52, 53, 56, 57, 60*, 63, 68, 70*, 72*, 76, 77*, 78, 79, 81, 82*, 91, 93*, 94*, 98, 99*, 301*, 03, 07a, 09*, 10*, 12, 23*, 28, 34*, 35, 36, 38*, 46, 50, 52a, 53, 54, 55*, 62, 63*, 68, 69, 76*, 77, 78*, 82*, 83*, 85*, 90, 93, 98, 99, 400*, 06, 09, 10*, 11, 18*, 19*, 22, 24, 25, 28, 29*, 30, 32, 36*, 37, 38*, 39, 42*, 43, 44*, 46, 47*, 51, 58, 60, 64, 69*, 74*, 77, 78, 79*, 80*, 88*, 89*, 90, 91, 93.

Offerata, rare species of North American Coleoptera. *Lack full set.

The Snow Collections, University of Kansas, Lawrence

FIRST INTERNATIONAL ENTOMOLOGICAL CONGRESS.

KEY TO PHOTOGRAPH

KEY TO PHOTOGRAPH

1 Dupuis, F.
2 Engels, Mlle.
3 Kerremans, Ch.
4 Horn, Mme.
5 Clavareau, H.
6 Bourgeois, J.
7 Koller, A. (Musee)
8 Severin, Mlle.
9 Horn, W.
10 Cauwenberg, H. (Musee)
11 Gilens (Musee)
12 Regnier (Musee)
13 Magretti, P.
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21 Assmuth, J.
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31 von Buttel-Reepen, H.
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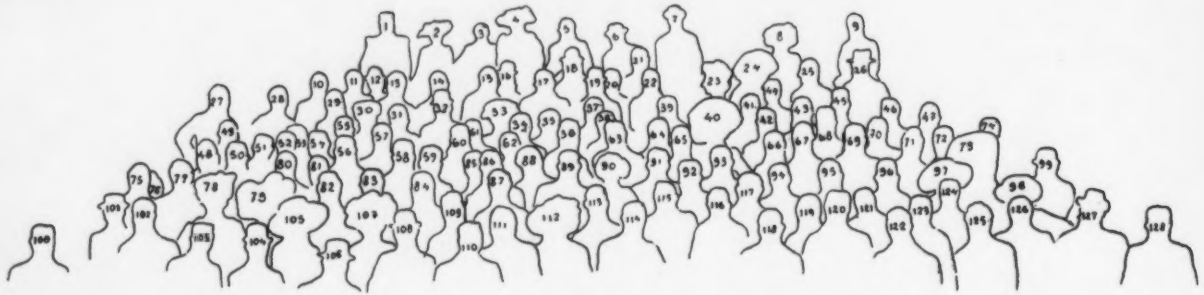
38 Dollo L. (Musee)
39 Dadd, E.-M.
40 Junk, Mme.
41 Ris, F.
42 Marshall, Guy A.-K.
43 von Schulthess, A.
44 Solari, F.
45 Desneux, J.



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48 Rousseau, E.
49 Braem, R.
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51 De Dryver (Musee)
52 De Meijere, J.-G.-H.
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70 Schouteden, H.
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72 Riotte, C.
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74 Gilson, G. (Directeur du Musee)
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78 Andres, Mme.
79 Speiser, Mme.
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81 Kertesz, K.
82 Ball, F.
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84 Dixey, F.-A.
85 Tarnani, J.-K.
86 Burr, Malcolm
87 Wainwright, C.-J.
88 Guilleaume, F.
89 Howlett, J.-M.
90 Guilleaume, Mme. F.
91 Mayne, R.
92 Everts, jonkheer E.
93 Jones, A -H.
94 Mac Dougall, R. S.
95 Stringe, R.
96 Wasmann, E.
97 Poulton, Mlle.
98 Veth, H.-J.
99 Hannon, Th. (Musee)
100 Bagnall, R -S.
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102 Osborne, H.
103 De Dobbeleer, F.
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105 Szilady, Mme.
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124 Arrow, G.-J.
125 Handlirsch, A.
126 Veth, H.-J.
127 Seitz, A.
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ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XXI. NOVEMBER, 1910. No. 9.

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Synonymical Notes on Neuroptera.

BY NATHAN BANKS.

In the Records of the Indian Museum, Vol.III., for October, 1909, Dr. Needham has published some new genera and species or Neuroptera. One *Annandalia*, p. 208, is a genus of Hemerobridæ near *Sympherobius*. I have now seen a specimen of it and find it is the same as my *Notiobiella* from Australia; Navas has recently described species of *Notiobiella* from India. *Notiobiella* was described in the Proc. Ent. Soc. Wash., XI, p. 80, issued 31 August, 1909.

In this same article Dr. Needham says he has identified the *Hemerobius setulosus* of Walker as a *Micromus*. Walker says that his species is near the *H. hirtus* of Europe; this latter species is a *Megalomus*, and I have a species of *Megalomus* from India which in other points also agrees with Walker's description. This species also fits very well with a species of *Megalomus M. nowhalieri*, recently described by Navas from India. So I consider *M. nowhalieri* as a synonym of *M. setulosus* Walk. In this same article Navas (Broteria,

IX, 1910, describes two new genera of Hemerobiidæ, *Zygophlebius* and *Balmes* which differ from all other forms in having very broad wings and the subcosta, radius and radial sector all united at tip near the stigmal region of wing. Now this is the exact character that distinguishes the old genus *Psychopsis* of Newman from all other Hemerobiidæ, and the figures of Navas only make more plain the fact that *Zygophlebius* and *Balmes* are synonyms of *Psychopsis*. Navas in his synoptic table places *Psychopsis* in the Hemerobininæ near my genus *Oliarces*. This is sufficient evidence that he has not recognized *Psychopsis*. In the Ann. Soc. Sci; Bruxelles for April, 1909, p. 4 (sep.) Navas has described a species of the Hemerobiid genus *Psectra* (*P. buenoi*) as new from New York State. He distinguishes it from the old species *P. diptera*, because the hind wings are fully developed, and some slights points in venation. The general view of Neuropterists is that these two and four-winged forms are all one species, and a recent Swedish article treats of them under the one name showing that both forms occur in both sexes and in the same localities. However this may be, the American four-winged form was described in 1856 by Asa Fitch as *Hemerobius delicatulus*, and is so recorded in papers of Hagen and by myself, so that *P. buenoi* Navas is a synonym of *P. delicatulus*. In a monograph of the family Nemopteridæ (Mem. Real. Acad. Cien. Artes, Barcelona, VIII, No. 18, p. 21, 1910), Navas has erected a new genus, *Eretmoptera*, for some species and seemingly on good characters, the name, however is preoccupied by Kellogg in 1900, for a curious little California fly, so that I propose *Nemopterella* for the *Eretmoptera* of Navas.

CAPTAIN CHARLES KERREMANS, of Brussels, the great authority on The Buprestidae of the world devotes all his spare time to getting out his superb monograph of those insects. He has a remarkable collection and many of the Tropical species are very brilliant insects. During the International Entomological Congress he gave a very enjoyable evening reception to some of the delegates and exhibited his collection.

Notes on the Arachnida of Placer Co., California.

By Karl R. Coolidge.

The following species of *Arachnida* were taken by myself at Alta in April and the earlier part of May, 1907. A brief sketch of the region in which I collected has already been given (Entom. News, Feb., '08).

When I first arrived at Alta, on April 6, there was a good covering of snow on the ground and hence little collecting was done until towards the latter part of the month. The next day after my arrival I took a short trip into the American River Cañon, which is about a thousand feet below the elevation of Alta, and there several species were taken which were not met with at Alta. *Epeira gemma*, in particular, was very abundant in the entrances to the old deserted mines of the Forty-niners.

An *Ottonia* (*Trombidium*) *locustarum* was found under some leaves, and, considering the threatening weather, I concluded to take him in.

As is well known, the Arachnid fauna of Northern California has many species common to Europe and America, and in California northern spiders extend much farther southward than in the Eastern States, although the Pacific latitudes are considerably warmer than the Atlantic ones. A complete *Arachnid* survey of Placer county should produce interesting results, and I hope, from time to time, to be able to add to the present list.

With most of the species, I have given the other California localities from which they are known, recorded by Banks ("Some Arachnida from California," Proc. Cal. Acad. Sci., Vol. III, 1904) or in my list of the *Araneida* of Santa Clara county, Cal. Besides those here enumerated, I have a few other species unidentified as yet, and which may prove new. I am glad to be able to here thank Mr. Nathan Banks, of East Falls, Va., for his kindness in identifying various species.

ARANEIDA.

CLUBIONIDAE.

Cayenna californica Banks.

Cayenna californica Banks.

A few examples of this species were found in my room, late at night, April 6. Described from Marin and Santa Clara Counties, California.

AGALENIDAE.

Agalena pacifica Banks.

Syn.: *A. curta* McCook, Amer. Spid. II. [No description.]

Quite common in April.

Agalena californica Banks.

Also common. Described from Black Mt. (Santa Clara County, Cal.), and recorded from Claremont.

THERIDIDAE.

Steatoda borealis Hentz.

Common in cracks and window frames. My specimens are much darker than those from Palo Alto. *Borealis* is a widespread species, occurring all over the United States. I have found it abundant at Palo Alto and Pacific Grove (Monterey County), and have received specimens from Calgary, Alberta (Wolley-Dod) and Fort Wingate, New Mexico (Woodgate).

Steatoda borealis Hentz; *a*, position of eyes.

Linyphia phygiana Koch.

This species is common in Europe and in the Northern United States down to California. In Placer County I found it extremely abundant especially on the tips of spruce and pine branches. The nest is a large flat sheet supported by threads from above and below.

Linyphia litigosa Keys.

A few immature specimens on pine. It is very much rarer than the preceding. Banks does not record it.

EPEIRIDAE.

Epeira curcurbitina Clerck.

Syn.—*senoculata,* Fab.
viridis-punctata, De Geer.
Var.—*displicata* Hentz.
Syn.—*americana* Walck.

Displicata may be considered the American variety of the European *curcurbitina.* It is abundant all over the United States.

Epeira gemma McCook.

Several taken in May. The web is a large circular affair, and the owner rests in a nest of leaves and rubbish placed on the upper side. *Gemma* is one of the largest orb weavers of the Pacific Coast and is well distributed from San Diego to British Columbia, and also occurs in Louisiana, Montana, Utah, South Dakota and other States. I have received a number of specimens of *gemma* from Mr. F. H. Wolley-Dod, collected at Calgary, Alberta.

Zilla californica Banks.

A single immature specimen taken. It is not rare in the vicinity of San Francisco Bay.

Cyclose turbinata Walckenaer.

Syn.—*caudata* McCook.

The webs of this species were very noticeable on spruce and pine branches. The spider itself, however, is rather difficult to detect as it usually remains near the center of its web, at the junction of the line provided for dead insects, etc., and looks like part of the rubbish.

Cystophora californiensis Keys.

Syn.—*Epeira bucardia* McCook.

Five specimens in the shaft of an old mine in the American River Canon, April 7. *C. californiensis* is common at Palo Alto and is also reported from Marin County and Mt. Shasta.

TETRAGNATHIDAE.

Tetragnatha extensa Linn.

Occurs in Europe and the Northern United States down to the West Coast. The synonymy of this species would cover several pages.

THOMISIDAE.

Xysticus californicus Keys.

A number of young taken on the blossoms of *Arctostaphylos manzanita* Parry. Appears to be well distributed throughout California.

Misumessus asperata Hentz.

Also common on *Arctostaphylos*. *Asperata* belongs to the genus *Misumessus* Banks, comprising the following species: *M. asperata, M. oblonga* Keys (type), *viridans* Bks., *M. bellula* Bks., and *M. pictilis* Bks.

Misumessus asperata Hentz.

Asperata is common throughout the United States. I have taken it rarely at Palo Alto. Banks does not record it.

LYCOSIDAE.

Pardosa glacialis Thorell.

Sny.—*Lycosa concinna* Thorell.
Pardosa brunnea Emerton.

But a single specimen captured. In California, known from Marin and Shasta Counties. Reported from Colorado under the name of *concinna*. (Banks, Lycos. Col. J. N. Ent. Soc. 51, 94.) Originally described from Greenland and has been found on Mt. Washington, New Hampshire.

PHALANGIDA.

PHALANGIDAE.

Liobunum exilipes Wood.

Several specimens belonging to the species taken in early April. It has a wide distribution and has been collected in California, at Claremont, Mt. Shasta, Palo Alto and several other localities.

ACARINA.

TROMBIDIDAE.

Ottonia (Trombidium) locustarum Riley.

A single specimen under leaves. Known from the East and also Texas and California. It is known to destroy grasshoppers' eggs. Very characteristic in having the anal opening on the dorsum, like the Eupodid genus *Notophallus*.*

*For figure see Banks, Proc. U. S. Nat. Mus. XXVIII, No. 1382, p. 32. and also Trans. Amer. Ent. Soc. XXI, p. 213, 1894.

Noctuid Notes.

By F. H. Wolley Dod, Millarville, Alta, Canada.

During a trip in the East, made last winter, devoted principally to the study of Noctuidæ in various collections, the author was enabled, through the courtesy of Prof. J. B. Smith, to spend about twenty-two full working days over that at Rutgers College, nominally Prof. Smith's own. It was the first time I had had the pleasure of meeting the Professor, with whom I have been in correspondence for over sixteen years, and I found him goodness personified. He gave me undisturbed possession of the collection room during nearly the whole of the time, affording me opportunity of discussing various points with him as they turned up, and urging me to help myself to any species for which I took a fancy. The extent to which I availed myself of the latter offer may be judged from the fact that I filled a number of cigar boxes (I find it convenient to forget the exact number!) and further imposed upon his generosity and good nature, not to mention his valuable time, by leaving them with him to be packed and sent after me! The time I spent in careful study, comparison and note-taking at the collection was of incalculable pleasure and benefit to me, and I had, as is my custom, over five hundred specimens of my own with me to compare with types, etc.

For similar opportunities of study of which I gladly availed myself I am indebted to Mr. Beutenmüller, of the American Museum of Natural History at New York; Mr. Doll, of the Brooklyn Institute of Arts and Sciences; Dr. H. G. Dyar, of the United States National Museum at Washington; Dr. Wm. Barnes, of Decatur, Ill., and Mr. Gerhard, of the Field Museum, Woodlawn Park, Chicago.

As Prof. Smith has published by far the greater part of the literature dealing with North American Noctuidæ for some years past, it must necessarily be at him that most of my criticism will have to be leveled in periodical publications of notes. I trust that such criticisms of the writings of him or others will give no offense, as they will be made in friendly spirit,

believing that such is the best way towards understanding past publications, as well as stimulating interest in a much neglected family of Lepidoptera. We cannot all think and see alike, nor is it easy to find two men with exactly the same views about species. Free criticism also leads to the detection of errors, and where the critic errs he may justly claim that expressing a wrong opinion is often more useful than expressing none.

Paroragrotis catenuloides Smith.

In Journ. N. Y. Ent. Soc. xviii, p. 88, June, 1910, Prof. Smith designates, under this name, the species universally labeled *catenula Grt.* in American collections, and always named as such by himself. In so doing he has, in the author's opinion, merely created a synonym of *vetusta* Walker. When I was at the British Museum during February and March, 1909, I recognized in Grote's type of *catenula* from Colorado, which is excellently figured by Hampson, the *contagionis* of Smith. The latter was described in 1900 from Glenwood Springs and Garfield county, Col., and Verdi, Nevada. Prof. Smith sent me specimens five years ago from Stockton, Utah, and I have since received upwards of a hundred from the same locality, from which I now have a picked series of thirty in my collection. One of these I have labeled as being exactly like Grote's type of *catenula,* as I fortunately had a dozen or more specimens of my own with me to choose from. I have one specimen from Glenwood Springs. The type of Walker's *vetusta,* from Nova Scotia, is a very badly rubbed specimen, but undoubtedly the species passing under that name in the East. My series at present consists of over forty set specimens, from Sherborn, Mass.; Chicago; Vineyard, Utah; Denver and Glenwood Springs, Col.; Kalso, B. C.,; Calgary, Alta, and Aweme, Man. The variation consists of differences in tint, from a whitish or luteous to a violaceous gray, and in differences in distinctness of the lines. In some the t. p. line is continuous, deeply crenate; in others it is punctiform only, with whitish points on the veins exterior to the black ones. The reniform is broad but ill defined and irregularly outlined.

It is perhaps best described as a dark cloud, partially or wholly filling the space between its indistinct defining lines. I have studied the species closely for years, and entirely failed to recognize two species out of specimens standing variously as *catenula* and *vetusta*. As a whole, Western specimens have better defined maculation than those from the East, but I have specimens from Chicago, Calgary and Glenwood Springs which match well. It is the usually better marked Western forms which have been called *catenula* in error, and which Smith now designates as *catenuloides*. I have seen a good deal of material in other collections, including Prof. Smith's own, but have no reason for supposing that the new name applies to anything but *vetusta*. Holland's figure of *vetusta* is correct, and the *catenula* of my published Alberta list is the same species.

Catenula is much the same color, but smaller, narrower of wing and much lighter in build. Besides this, the most obvious difference in maculation is in the reniform. This is a blackish constricted crescent, with the cross vein in its center usually showing up of the pale ground color. Contrast this with the broad cloud of *vetusta*. In *catenula* there are three distinct black points on the costa, defining the extremities of basal, t. a. and t. p. lines. In *vetusta* these points are geminate, inclosing whitish. Though I have never confused the two myself, the resemblance of occasional specimens is undeniable, especially in the case of a small *vetusta* in which the dark cloud in the reniform is much reduced. The two species stood mixed in the British Museum when first I saw them, but have since been separated. Fortunately the type of *catenula* is correctly figured in Vol. IV, of Hampson's Catalogue, and the figure of *contagionis* is the same species, as is also, I regret to say, the woodcut under *vetusta*, the type being too poor to figure. Both have occasionally a pinkish or violaceous variety, as has also, by the way, the similarly endowed *scandens*. *Muraenula* Y. & R. I believe to be *vetusta*.

As Prof. Smith makes no generic reference for *catenula* in the paper above referred to, we can only assume that his

reference of *contagionis* to Euxoa must stand. *Porosagrotis* is recognized by Hampson, and distinguished from *Euxoa,* (1) by the stoutness of the fore tibial armature and (2) by the male clasper being falcate instead of bifurcate. The former character is not a well-marked one, and can hardly be distinctive. The form of male clasper, on which Prof. Smith based the genus, he states to be striking and quite constant. Sir George Hampson appears to take this for granted, as he gives no figure. Pro- and metathoracic crests in *Euxoa,* absent in *Porosagrotis,* is the only other distinctive character mentioned by Hampson, but this is not well marked either, as I find such crests in both *vetusta* and *satiens,* placed by him in *Porosagrotis.*

Mamestra tenisca Sm.

Described in the same journal from Stockton, Utah, and Bozeman, Montana. I saw the type in Prof. Smith's collection, beside specimens of *stricta* from Stockton which he does not mention having. *Tenisca* seemed to me a very close ally of *stricta,* but distinct. I have no compared specimen, and though I have one of the species from Stockton, my notes do not enable me to feel sure which.

Mamestra meodana Sm.

Described as a close ally of *liquida* yet, and said probably to occur over a similar range. Of its validity as a species I am very doubtful. Typical *liquida* Prof. Smith states to be narrow winged and brighter colored. I saw the type from Washington in the British Museum, but did not note that it was brighter or narrower winged than Calgary specimens which were there also. Hampson figures the type, and I passed the figure without other comment, so assume it to be good. It appears a little narrower winged and more contrasting than Calgary specimens, which are typical *meodana.* But as those figures are sometimes a trifle inaccurate in detail, it is unsafe to judge from one with respect to such a closely allied form as the present. But assuming Prof. Smith to be correct in stating that *liquida* is the bright form, I studied his two series together and

cannot feel sure that the differences are specific, the maculation being admittedly similar. I have seen no Calgary specimens quite as bright as Prof. Smith's *liquida* nor have I any such from other localities. *Lilacina,* an allied species, has an even greater range of variation, and at Calgary I take the even dull gray form called *illabefacta* by Morrison, and every intergrade up to a form as bright and contrasting as supposed typical *liquida.*

Luperina extensa Sm.

Smith now refers his *Perigea flavistriga* to this species. The latter was described from Lethbridge, Alta, and *extensa,* prior by half a page only, from Regina, Sask. *Flavistriga* was procured through me, *extensa* through Dr. Fletcher, and both, oddly enough, were taken by Mr. T. N. Willing. When at the British Museum I made the reference in my notes, with a query, from figures of each type sent there by Prof. Smith. The venture was risky, but proved correct. The type of *extensa,* which is now greasy and probably much discolored, is poorly marked and almost the color of a dark *passer. Flavistriga* is well marked, and blacker brown. I have a splendid specimen from the Red Deer River compared with both types.

Hyppa spaldingi Sm.. (Jour. N. Y. Ent. Soc. xvii, p. 59, June, 1909).

Described from Stockton, Utah. This is prior to *Trachea umbrifacta* Hamps. (Cat. IX, 501, 1910), described from the same locality. The type of *umbrifacta* is a female, one of several specimens received by me from Mr. Thomas Spalding, dated May 30 to June 27, 1907. I took a couple to the British Museum, but not finding it in the collection, left one for Sir George Hampson to describe. *Spaldingi* was a unique, also a female, and did not pass through my hands. Smith, while describing it as a *Hyppa,* remarked that it was quite unlike our other *Hyppas,* and recalled the yellow-winged *Xylophasia semilunata* and *inordinata.* It is more like *cinefacta,* and has the thoracic vestiture and the tuftings of that species. Hampson places both, with others of our Hadenas, in *Trachea* Ochs. *Hyppa,* which Hampson makes a synonym of *Lithomoea*

(=*Lithomoia*, Hübner), has a more quadrately scaled and loose, hairy thorax, hairier palpi and larger abdominal tufts. My only male has the ciliate antennæ of *cinefacta*, which is its closest ally.

Perigea alfkenii Grt.

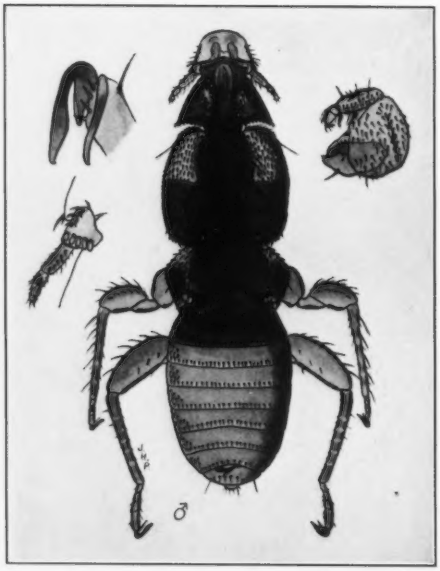
Grote applied this name to the type of his *perplexa* without locality, in the Neumœgen collection at Brooklyn. I have the species from Arizona and California, and it stands correctly named, under *Namangana* Staud, in the British Museum. But the species has hairy eyes, which has been overlooked by Hampson, as he treats the genus as smooth-eyed. The hairs are very fine, short and sometimes, even in apparently unrubbed specimens, very scarce and difficult to see with a powerful lens even in strong sunlight. *Perigea latens* Sm., described from San Diego, Cal., and Yuma Co., Ariz. (Journ. N. Y. Ent. Soc., xvi, p. 92, June, 1908), has also hairy eyes and is, in my opinion, the same species. I have a good series from the first-named type locality. The type labels, by the way, read *patens*.

Taeniocampa occluna Smith.

Described in the same journal, xvii, p. 64, June, 1909, from a single male from Mesilla Park, New Mexico. Its author states under the description that the antennæ are very shortly pectinate, almost serrate only. I had overlooked that statement, but failed to notice any external difference from *alfkenii*, to which I have referred the species in my notes. *Alfkenii* has male antennæ bipectinate, with rather short branches above the shaft and shorter ones beneath it. The upper row of branches cannot be called "almost serrate" in any of my specimens. A confirmation of antennal differences is necessary to convince me that *occluna* is not *alfkenii*.

Eupolia licentiosa Smith.

Described in 1894 from a pair from Utah in the Neumœgen collection, the genus being created to receive it. But the species has hairy eyes, though the hairs, being very short and



A NEW POLYCTENID—KELLOGG AND PAINE.

scarce, they were overlooked in describing the genus. Hampson makes *Eupolia* a synonym of *Namangana;* and *licentiosa,* which was known to him only by a figure of the male type, is in the catalogue next to an Indian species, but in a different section of the genus from *alfkenii,* the sections being separated on antennal structure.

A New Polyctenid.

By V. L. KELLOGG and J. H. PAINE, Stanford University, California.

(Plate XII)

The curious bat-infesting, wingless, insect parasites of the genus *Polyctenes* as originally described by Giglioli in 1864 were assigned by their discoverer to the Dipterous family Nycteribiidæ, but their sucking beak and incomplete metamorphosis align them with the Hemiptera, as indicated in 1874 by Westwood. In 1879 Waterhouse added, quite wrongly, a new winged genus to the group and decided, mainly on the strength of his addition, that the family was nearly allied to the Hippoboscidæ. In 1906 Kirkaldy, in a paper in the Canadian Entomologist (Vol. 38, p. 375) includes the following reference. (This paper is a list of emendations to the authors previous "List of the Genera of the Pagiopodous Hemiptera Heteroptera," Trans. Amer. Ent. Soc., vol. 32, pp. 117-156, 1906).

'..Family ..Polyctenidae.

"Genus 1. *Polyctenes,* Giglioli, 1864. Q. Journ. Micr. Sci., IV, 25, type *molossus,* Gigl., Pl. Ib., Figs. 13-14.

"Genus 2. *Euroctenes,* gen. nov., type *lyrae* (C. O. Waterh., 1879. T. E. S. London, Pl. IX, Figs. 1-2).

"Genus 3. *Eoctenes,* gen. nov., type *spasmae* (C. O. W., op. c., Figs. 3-4).

"Genus 4. *Hesperoctenes,* gen. nov., type *fumarius* (Westw. 1874. Thesaurus Ent. Oxon., Pl. 38)."

"The characters of these four genera have been indicated by various authors, but only one, *Polyctenes,* has been named:

"1. Palaeogaeic forms; posterior legs comparatively short and stout, about half the length of the bug; the claws unequal, and nearly simple, the other large and bent, its basal tubercle nearly as long as the simple claw.....2.

"1a. Neogaeic forms; posterior legs as long as the bug; claws nearly equal, with a small tooth at the base,
1, **Hesperoctenes**, mihi

"2. Antennae long, the third segment almost (or more than) as long as the fourth.....3.

"2a. Antennae shorter, third and fourth segments about equally long .....4, **Eoctenes**, mihi.

"3. Head medianly wider than long. Pronotum transverse,
3, **Polyctenes**, Gigl.

"3a. Head medianly longer than wide. Pronotum elongate,
2, **Euroctenes**, mihi."

The new species which we describe here is based on three specimens, two males and one female, received from the Entomological Research Committee of the British Museum in Tropical Africa. These specimens were taken from an unidentified bat from Khartoum in the Egyptian Sudan.

Eoctenes eknomius sp. nov.

Differs from the type species of the genus, *E. spasmae*, in having the the metathorax cleft for half its length and a row of cultriform spines on the posterior margin of both the pro and mesothoracic segments, as well as a similar row on the head. It shows also various less conspicuous differences.

Length of body, 2.3 mm.; width at widest part, .8 mm.

Head: Length, .46 mm.; width, .44 mm.; widest at posterior angles, which are acute, and narrowing to the base of the antennae, then widening suddenly to form the rounded clypeus. Suture separating clypeus from the posterior portion of the head very distinct. The lateral margins of the clypeus are flattened and here occur four rounded chitinous thickenings on each side, from each of which arises a fine hair, the anterior one short, second long, third short, and fourth long. The posterior margin is incised angularly leaving a central clear space, bordered laterally by two fan-shaped chitinous thickenings which extend forward into the clypeus. A row of sharp spines extends inward from the posterior lateral angles to the inner angles of the posterior margin. On the ventral side of the head a chitinous band extends from each posterior angle of the head forward along the margin, curving

inward before it reaches the antennae and bearing a row of fifteen long, flattened, blunt spines. On the dorsal surface of the hind head are two rows of five sharp spines each, extending obliquely inward and backward. Just forward of the first spines of this series are two more. Occipital margin sinuous and bordered by thirty-four of the characteristic flat spines. On the posterior lateral angles are three or four sharp spines. Antennae, length, .26 mm., four jointed; basal segment broad, flat, triangular shaped with the apex pointing forward with a row of the broad, flat spines across the base on the ventral surface; second segment long, cylindrical; third and fourth short, the distal segment a trifle the longer; numerous spines on all the segments.

Thorax over twice as long as the head, 1.08 mm. Prothorax, length .56 mm., width, .6 mm. The general shape is quadrilateral, the widest part a little posterior of the middle; sides flatly rounded, meeting the slightly convex anterior margin in an obtuse angle; a row of short spines occurs paralleling the median portion of the anterior margin; behind these are three long spines on each side which point toward the meson; entire surface of prothorax covered with short, sharp spines, with the exception of a bare central area. The posterior margin is convex and meets the sides in an angle; along this margin is a row or thirty-seven broad, flat spines. Mesothorax broader than long; length .46 mm., width .58 mm.; anterior margin convex, extending under the prothorax; anterior angles broadly rounded, the segment here presenting the greatest width; lateral margins flattened and narrowing to meet the posterior margin in an angle; posterior margin convex, bearing a row of thirty-four broad, flat spines. This segment is divided along the meson from the posterior margin nearly to the middle; entire surface covered with short spines, with the exception of a bare central area. The metathorax has the appearance of being the first abdominal segment and extends under the mesothorax to the anterior end of the median division of that segment. At the anterior lateral angles is a chitinous process and a dark blotch, seen through the mesothorax.

Prothoracic legs short and carried folded under the prothorax; tibiae almost as broad as long; tarsi three segmented. Meso- and metathoracic legs long, tibiae slender; posterior pair extending beyond the end of the abdomen; tarsi four segmented with two claws, one of which is heavy, compound and recurved; simple claw smaller. All the legs bear numerous spines.

Abdomen elliptical; eight segmented; a row of short spines extends across each of the first seven segments and numerous spines are near the lateral margin of each segment.

Eupithecias that appear to be Undescribed.

By RICHARD F. PEARSALL, Brooklyn, N. Y.

E. valariata n. sp.

Expanse, 20 mm.—palpi short, stout, dark brown. Antennae slender, flattened, shortly ciliate in ♂. Front and vertex, pale ashen gray, the former with dark brown line above clypeus. Thorax with narrow band of dark brown, crossing above scutellar region. All the rest of the body and wings above with ground color of light gray, heavily sprinkled with ruddy brown scales. On primaries, which are narrow, somewhat produced apically, these are massed broadly along costa, and inner margin, less so subterminally, leaving cell a somewhat clearer gray; vein below cell, brokenly barred with black. Abdomen without black ring, the dorsal tufts on central segments, small, clear white. A series of fine indistinct lines, crossing primaries are formed by the ruddy scales, the basal with strong outward angle below costa, almost touches wing base at inner margin, and the discal and intradiscal run parallel with it, the latter passing through the small, but distinct black discal spot. The extra discal, broader and slightly darker, rounding out about cell, runs straight, with a slight basal trend to inner margin. Parallel with this are three or four hair lines, traceable in submarginal space. The pale geminate line, usually following extra discal, and the white subterminal line are wanting in this species. Marginal black line faint, broken. Secondaries clear, except several broad, short lines at inner margin. No discal dots. Fringes on all wings long grayish. Beneath, pale ashen, the primaries flecked with darker scales. No lines as above, but the geminate pale line beyond extra discal is quite apparent, and extends sometimes across secondaries, in which case it is bordered by a broken line of dots at crossing of veins, externally. Discal dots dusky somewhat diffuse. Legs and body sprinkled with dark brown scales. Abdomen beneath clear white centrally with lateral borders of dark brown, dusky at tip.

Types—Two ♂ ♂ and two ♀ ♀ from San Diego California, through Mr. L. E. Ricksecker, the former labeled III. 9 and 10th, the latter III 10 and 12th, 1910, all in authors collection.

When fresh, these examples were veiled with a roseate biush, which quick fades into the ruddy brown as described.

E. cognizata n. sp.

Expanse, 22 mm. Palpi short, stout, dark brown. Front, dark brown centrally, with margins and vertex paler, almost white. An-

tennae stout. bi-fasciculate ciliate, dark brown above, ringed with white. Thorax broadly banded across front with dark brown, behind which there is a central patch of clear white scales, more distinct in front, extending over the scutellar region. Primaries ample, a little extended apically, above a golden brown, with cross lines and veinings of dark brown and black. Discal dots round moderately large, distinct, black. The dark basal area, is succeeded by a paler space centrally, crossed by a suffused dark line. A geminate pale line precedes the discal line, which is broad at costa crosses it with a gentle curve, then at median vein, makes a sharp angle toward discal dot, receding and becoming a straight hair line below to middle of inner margin. Three or four fine lines sub-parallel to this cross discal space, darkening it somewhat, the outer one forming the extra discal, hardly darker than the others, and less sharply angled below costa. The pale geminate line is broad, rather clearly defined. Subterminal space veined with dark brown and black and having a sprinkling of white scales apically, is divided centrally by a clear white much broken line, with a large spot between veins 3 and 4 and at vein 1, terminating in a sharply defined V. Marginal line on all wings heavy black, broadly broken at veins inwardly crescentic between them. Fringes on all ♀ wings long silken yellowish brown, cut with dark spots at end of veins. Secondaries pale yellowish ashen. The inner margin broadly overlaid with color of primaries, less distinctly so along outer border. A few dark brown cross lines and the geminate pale line, show at inner margin but all disappear before reaching center, except the two at base which faintly reach the costal margin in direct lines. Discal dots large, dusky, blurred. Abdomen clothed with rough dark and yellow brown scales. Segments at terminal margin narrowly edged with white. Tufts not apparent. A narrow black lateral line on second and third segments. Beneath dusky yellowish ashen, darker on primaries. Two pale geminate lines start from costa on either side of the jet black linear discal dot, and merge below it into a single line, running straight to inner margin. Outside the dark brown extra discal which outwardly margins the pale lines mentioned, and is quite well marked—the usual geminate pale line, as above, is clearly defined and runs across wing with a gentle outward curve below costa. The inception of the dark lines is heavy, almost black at costa. The subterminal space has a series of pale lateral dashes through it. On secondaries three dusky brown lines cross wing within the black linear discal spot. The fourth is more waved and darker, and just passes the lower point of the discal spot. At costa it has a dusky diffuse brown spot, and is quite well marked at inner margin. Outside this is the broad geminate pale band, its outer margin curved outward to parrallel border of wing, and indi-

cated by a row of dots on veins subterminal space as on primaries, but less distinct. Body and legs silvery ashen, the latter heavily covered in part with dark brown scales. Abdomen dusky at tip.

Type.—A perfect ♂ from Witch Creek, California, taken II, 15, '09, by Mr. H. W. Marsden. Another ♂ in only fair condition from the same locality has been in my possession for several years, but too much rubbed to constitute a type. This I have made a cotype. Both are in my collection.

(To be continued)

Collecting and Mounting Micro-Diptera.

By E. T. Cresson, Jr.

In the little experience I have had in the collecting and mounting of Micro-Diptera, methods have been developed which I find very satisfactory and greatly enhance the value of a collection of these small insects. Altho the methods may not be new to many collectors, still there are some to whom these notes will be of aid. The common absence of good series of Micro-Diptera in most collections I have examined, is due no doubt to their small size, but especially to the fact that entirely different methods must be employed, than are usual with the larger insects, in collecting and mounting, to insure perfect specimens. This subject, I will divide into two instalments, of which the first will be upon collecting. My experience in this line has been done mostly in quest of the members of the Acalyptrate family Ephydridae, to which my remarks will pertain more especially, and to those insects having similar habits and habitat; but the same methods may be used with the small insects of other orders.

It is at once seen that the net proper (cone) is simply a large funnel with its small end projecting about one and a half inches into the bag (pocket); out on the base or large end of the cone is sewn a separate piece (band) which in case of detachable rims, can be turned over and sewed permanently as shown, or, for solid rims, if one wishes to have a detachable

net, can be left so as to lap over the rim and buttoned or similarly fastened: in which case the upper edge of the band is not sewn to the cone at "E," as given in detail of patterns.

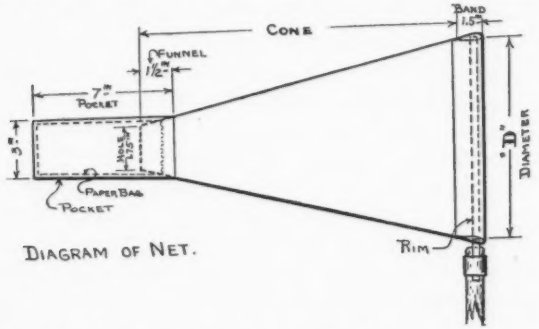
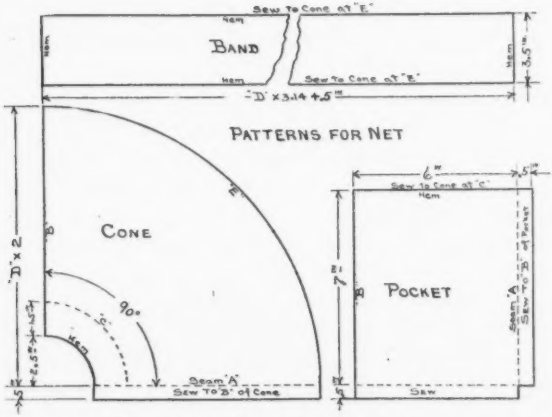


DIAGRAM OF NET.

This band is used because the goods is cut bias along this edge and cannot be satisfactorily lapped over the rim. The dimensions of the pocket is given for the accommodation of a standard one-quarter pound paper bag. I have given sketches



of the patterns by which the material for the net can be cut, based upon the diameter "D" of the cone at the rim. Care must be exercised in sewing edge of pocket to cone at "C," and must

be done before either the cone or pocket is sewn up along edges "B;" but your mother, wife, sister, or lady friend who has any idea of dressmaking can easily make such a net after a little study of the drawings.

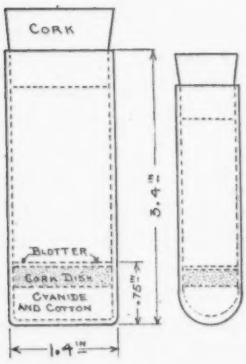
First in use, and of most importance in the collecting paraphernalia, is the net. The form I use was first suggested to me by Prof. C. W. Woodworth, of the California Agricultural Experiment Station at Berkeley, California, and is designed only for sweeping in which it excels all others in the collecting of Micros. It should be made of closely woven goods, such as bolting cloth, muslin, or any similar good material that will withstand the rough usage which a sweeping net is likely to encounter; never use bobbinet, or too heavy a material. Muslin, unbleached, is as good as any, is cheap, and one net will stand quite a number of ordinary collecting seasons. The design I use is shown in the outline drawing accompanying, and can be readily understood upon a little study. I use the Simplex net, ten inch steel rim, which I find very satisfactory, especially after eliminating the possibility of the ferrule working up the handle, by the use of a snap spring which keeps the ferrule in place when the net is in use, or, on the handle when the net is detached.

For use, a standard one-quarter pound paper bag, which is about six and a half inches long by two and a half wide, is inserted into the pocket, through the small hole at end of cone, arranging that the end of the same protrudes into the paper bag, funnel-like, as shown in the sketch. A few rapid sweeps through the air to inflate the paper bag and a glance to see that the end of the cone is properly placed and the net is ready for use. A net of this design, especially for collecting Ephydridae, or other hypdrophilous insects, has one great advantage over the usual or standard. In collecting over water or wet flats with the usual form of net the end will often hang down enough to strike the water, and thereby ruining the catch and also requiring some time for drying the net before continuing the collecting. With this form, even if the pocket

should get wet, the paper bag inside will generally remain dry enough to get out the catch safely, and may be renewed as often as necessary, thus eliminating any danger along this line. Another advantage, is that the most minute insects are retained, being unable to work their way out as they would through the bobbinet. It is also much easier to kill the catch than the usual method of putting the end of the net into a large bottle and waiting. To extract the paper bag after sweeping, grasp the pocket about one inch below its junction with the cone, firmly with one hand, and with the aid of the other reach in and pull the paper bag out through the small hole, all the while keeping the top of the bag pinched tight.

With the idea of keeping the catches from the various places or habitats separate, but more especially to keep them clean and dry, I use a number of small killing-bottles in preference to a few larger ones; although a medium size bottle is preferable for killing, while the smaller ones are used for keeping the catch in after killing. I use tubular vials without neck, as shown in an accompanying sketch, the larger about 1½ inches and the smaller ⅞ inches in diameter. In the bottom of each is placed a little cotton and a few lumps of potassium cyanide, then a little more cotton; upon this press down a snugly fitting cork disk in which has been punched three to five ⅛ inch holes. A disk of white blotting paper pressed down on top of this completes the operation and the bottle is ready. All this should take up about ½ to ¾ inches of the bottle. The blotting paper disks should be renewed as soon as they become moist or discolored, as they serve the purpose of keeping the insects from contact with the cork disk which soon becomes moist from the cyanide. Binding a

KILLING BOTTLES.



½ inch of adhesive plaster around the top of the bottles, and covering the bottom and lower side with the same, will lessen the danger of breaking when several are carried in the pocket or knapsack, and it also keeps the broken parts together if breakage occurs. A small label on the smaller bottles can be used for recording the habitats of each catch.

To transfer our catch, from the bag to the killing bottle, take the bag in the right hand and insert the mouth of the bottle into it, all the while keeping the bag snugly around the same. Now invert the bag, and with a few taps on its side and bottom as well as jarring the bottom of the bottle down upon the palm of the hand, all the catch will be transferred, leaving a surprisingly few in the bag. The bag can be used again if still in good condition. After killing, the catch should be transferred to one of the smaller bottles and the habitat noted. This method will always insure dry, clean specimens, especially if the worms, grasshoppers and all such of the larger insects or matter that may cause moisture or otherwise damage the specimens, are removed. This should always be done. When the bottle becomes nearly filled, or the insects lay closely together, an occasional gentle shake, or invertion, and ventilation by the removing of the cork for a few seconds, will keep the catch from sweating. With these Micros, one must always guard against the accumulation of moisture, which is sure to discolor the fine pollinose coating, and which I have never found means of restoring when once discolored. This is all that need be said about the collecting method. Our next concern will be the mounting, which will be discussed in another section. Of course there are many little details and tricks that will be worked out by each collector to suit himself, but in the main, the foregoing remarks will be sufficient to give an idea of the methods I have found most satisfactory and which have been the means of bringing to light many new species of the formerly obscure family Ephydridae and which are now represented in my collection by a series of perfect specimens.

The Development of a Green-Bottle Fly.

By Mary O. Allen, Milwaukee, Wisconsin.

The following life history is the result of investigation extending over a period of four summers under quite varying conditions. Knowing that several species of Diptera live on decaying matter, meat, both raw and cooked, was left exposed in several different places and at different times in order to obtain eggs, and these were usually forthcoming after a night's exposure if the conditions were right. Pieces left on the ground were often eaten by cats or dogs, and one small piece was drawn into the earth by a very large earth worm as was known by the fact that it had been put on a small piece of cloth, and the corner of this cloth was drawn into his hole and the worm was in this hole. Those portions of meat placed three or four feet above the ground were not touched, probably because the pupal state is passed under the surface of the earth if possible, and the larvæ could not drop down safely as can many caterpillars; also meat left in very sunny places was not visited, so it would seem as if the fly must know that sun and drought are fatal to her offspring. She herself disports in the sun most of the day. Whether the meat is raw or cooked seems to make no difference, but the green-bottle will not lay its eggs upon vegetable matter, although they may be seen extracting food from vegetable refuse. They must determine where the host is by the sense of smell.

The earliest that eggs have been obtained is June 13th, and it seems probable that they are usually laid in the early morning, as only once has a fly been seen depositing eggs. In this case she began by walking over and over the meat, fully forty or fifty times, feeling all the time with her ovipositor until she found just such a crevice as she wished. Into this she deposited about thirty eggs in irregular rows, then walked on continually feeling her way. She kept this up for two hours, depositing all the way from four to fifty or more eggs in each place. She probably laid no less than four hundred eggs, but they were not actually counted.

These eggs are pearly white, elongated oval in shape and when placed under a microscope are quite transparent and show a groove down one side. The eggs begin to hatch the day after they are laid, unless it is cold weather, when the development is retarded somewhat.

However, one does not always notice the larvæ, as immediately after emergence they begin to burrow into their host, unless they are in dense shade or it is cool weather. A casual observer might never realize that there were any maggots in the meat and yet, if it is pressed open or raised up, it will be seen to be nothing but a squirming mass of them protected from heat and light by an outer shell of their host. In one case forty maggots ate the whole inside out of a piece of meat an inch square in four days. Linnæus says the larvæ of three blow-flies will devour the carcass of a horse as quickly as a lion.

A newly-hatched maggot, apparently headless, tailless, footless, and semi-transparent, is nearly cylindrical in shape, but tapers somewhat towards one end; and its two long tracheæ running the whole length of its body as well as its black, powerful jaws, which enable one to determine the position of its head, may be plainly seen by the naked eye. Although all the motions of his internal organs may be distinctly seen with a microscope, yet in the very young larva the alimentary tract could not be traced, while the course of the tracheæ could be followed showing a branch and its two smaller branches in each segment and under high power, magnifying 450 times, one could see the fine projections at the thickest part of each segment on the ventral side, which part of the body is slightly flattened. The projections aid in locomotion, as do the jaws in some degree, for they grasp their food very firmly, yet these larvæ move in much the same manner as do worms and can travel in either direction with great rapidity. It is due to their general appearance and manner of locomotion that they are often termed worms and the resemblance

*Charlotte Taylor, Flies, Harper's Vol. xviii.

is certainly very complete. The posterior end of the body is nearly circular and here the tracheæ terminate in two spiracles, and at the second segment on the ventral side they end in two fan-like projections, which in the blow-fly Lowne says are functionless, which may be the case in this maggot also.

The larvæ grow rapidly; the warmer the weather the faster they grow, and when full-grown are nearly opaque and very strong. Their integument is very tough and thick and nothing seems to kill them but sunshine, drought, chloroform, and boiling water poured over them. They will not live more than two or three hours if left unprotected from the direct rays of the summer sunshine and will raise a heavy weight for such a small being in order to get into the shade; and in all stages of their development, lack of moisture will cause death. Several larvæ and all of the pupæ brought into the house died, and the second summer, when there was no rain for three weeks, but three flies appeared, in spite of the fact that they had been wet with water from the hose. It is even difficult to produce death by means of drugs; one larva placed in a cyanide bottle that had killed several insects was found the next morning burrowing in the plaster of Paris in the bottom of the bottle; it was then put into alcohol and after ten minutes was found standing upright on its anterior end or head; on another, benzine was poured and ammonia tried without result. But boiling water poured over them or the fumes of chloroform will cause death in a few minutes. It is to be inferred that their skins must be kept moist or they would not suffer so from lack of rain and from direct heat, and also that they do not take in a great deal of air, or fumes would have a deadlier effect on them; thus the toughness of their integument keeps them from being easily killed. Their jaws are so powerful that a full-grown larva moving across your hand will feel like a series of slight pin pricks, and they can make a scratch on a piece of cardboard.

A full-grown larva consists of three parts: a basal portion like a rounded plate, to which the strong muscles attach-

ing these jaws to the body wall are joined; to this is hinged a much smaller and more cylindrical portion to the knobs of which the jaws proper are fastened; these are made up of three joints, each capable of being moved in the other and the terminal one with a very sharp point; these points if brought together rapidly and forcibly, can tear away any substance capable of mastication by such small animals. These jaws are so strongly attached to the larva that they cannot be pulled out, but must be cut away from the body-wall, and yet may be retracted by the maggot.

From this mouth extends quite a simple alimentary tract consisting of a long tube with three enlargments: a crop, a stomach and the proventriculus, at the base of which enter five tubes; these are the malpigian tubes and they probably perform an excretory function. This whole tract is transparent, except the stomach, which has very muscular walls, is absolutely opaque, and of a yellowish-orange color; the outer part of the tube is perfectly clear throughout its whole length, while the inner portion is mottled, seems to have particles of food in it, and to be a tube within a tube. The only reason that can be given for this is that this contraction took place after death, and was due to the chloroform, but as insects do not breathe but through the tracheæ this does not seem a plausible explanation.

These larvæ are full-grown at the end of five days, and are then about one-half of an inch long. As soon as they have attained their growth, they stop eating and begin to burrow into the ground. They do not all reach this stage at exactly the same time, it being not less than three days before all the maggots had disappeared from view. If they are not allowed to go into the earth, they will try to burrow into anything that is soft enough, or if there is nothing to hide in, they simply become quiet and grow shorter and more rotund. However, larvæ in this state will move on stimulation for at least two days after the quiescent period has commenced. On removing them after one day under ground, it will be noticed

that they have become shorter and are somewhat barrel-shaped, and but little more than one-half their former size, or about one-quarter of an inch long; they are now turning a light brown and the outer covering is growing hard. In two days they are of a dark brown chestnut color, perfectly quiet, and the outer skin is perfectly hard but brittle; they are now pupæ. On trying to open these cases you will notice that the first three segments form a sort of cap and will separate from the rest if pulled quite hard, and, on cutting it open, the contents appear to be only a watery fluid with a few green and yellow tubes floating in it, the whole mass being attached but slightly to the case at the end. On looking closer, one hard, yellowish, opaque body may be seen which is the compound eye of the future fly. This appears first, then the rest of the head, the thorax, the abdomen, the legs, and lastly the wings of the fly can be distinguished. As each part develops the traces of larval life disappear, the substance of the old maggot being rapidly absorbed.

It is very wonderful when we consider that in but two or three days a squirming maggot, capable of moving, breathing, and eating with such strength and rapidity, can be so changed that no one part can be traced, not even his strong jaws, and that in ten days all this can be entirely absorbed and worked over into a new being. How carefully all the parts are folded over one another and how little remains of our maggot! No wonder the larva must pass through this stage while buried an inch under the ground if possible, an absolutely helpless thing must be protected from its enemies.

But these pupæ do not always mature; if placed on the surface of the earth or brought into the house and kept dry, death will ensue; also after the drought of three weeks mentioned above, but three perfect flies appeared, although the earth in the box was full of pupa cases, showing again the disastrous effect of drought. If raised in tin boxes only a small proportion come to maturity, possibly because air does not circulate through the earth as readily as when in wooden

boxes, and it is more apt to become sour or moldy. Then, too, the larvæ have hardly begun to pupate before very tiny flies begin to appear in large numbers. These are Phoridæ, and it seems as if they must be parasites, as only a very small number of green bottle pupae come to maturity; in one case only four out of twenty-five, in another three out of forty and again none where there were at least one hundred larvæ.

Eleven days after beginning to pupate perfect flies appeared and continued to struggle out of the ground for five days. How are these small insects able to make their way out of such hard cases and through all that solid earth? The head of the fly is formed at the end of the case, and when ready to emerge forces open this cap which splits into two parts, one or both parts of which often fall off; it does this by means of a sort of bladder-like organ—the ptilinum, which projects through the frontal suture. This assists him in his journey to the light, but it is afterwards withdrawn into the head and connot be seen. He comes out quite slowly, and at this time and even for five minutes after emergence he may be picked up with ease and will even rest on your hand for a short time, yet those flies which hatched in the night would nearly always escape were the glass covering raised but slightly, so rapid are they in their movements. When they first come out their wings are moist and uninflated, and they seem fatigued by the great exertion they have made. It takes flies but a very short time to fill their wings with air; they are not like dragon-flies, which may be seen during May and June on the grasses along the banks of the marshes and ponds pumping air into their wings by means of violent movements of the abdomen for nearly ten minutes before they can fly away. All the broods of green-bottles raised were composed of both males and females, the latter being more in number. The males may be told by their smaller size and nearly contiguous eyes. In both, the thorax and abdomen are of a bright green color, their compound eyes are wine-colored and are outlined with a narrow line of white; they are more oval in the male than in the female, and the white line is less con-

spicuous. Between these eyes there are three simple eyes, or ocelli, arranged in the form of a triangle. Between these large eyes as well as along the sides of the thorax and on the end of the abdomen there are several hairs or bristles which serve as a protection. The antennæ are also found between the eyes and consist of three joints, the third one provided with a feathered bristle. They may be bent down into a groove in the front of the head, and on that account are not so apt to be observed as those of most insects.

The mouth-parts consist of a pair of palpi, one on each side of a proboscis or sheath, which encloses three pointed portions. The proboscis of the green-bottle, as that of the house-fly when not in use, may be drawn into a groove on the under side of the head, and it has at its extremity two flexible lobes. This is quite large as compared with that of many Diptera, and consists of two lobes; it has no large veins and its only use seems to be to act as a protection to the halteres. These latter are very small, as the larger the alulet, the smaller the halteres. Their use is doubtful, but they are probably of value in flight, as it is said if one be cut off the insect will fly sideways, and if both be removed it cannot fly. They vibrate constantly, and as air passages extend from them through the whole body, they fill the nervures of the wings by means of these movements; a nerve runs their whole length from the papillæ at their base and they may be organs of smell or of hearing. The legs consist of the five parts: coxa, trochanter, femur, tibia and tarsus, common to all insects, the last joint of the tarsus having two pads with a pointed portion, the empodium between them. At intervals along the legs and at every joint are two or more bristles, these are not only useful as a protection, but also as cleansers.

Everyone must have noticed flies rubbing their heads, wings and abdomen with their legs, this is to clean them, as these hairs then act as a brush.

In some places Diptera of the species *Lucilia* are a menace to cattle and even to man; in The Netherlands *Lucilia sericata* deposits its eggs in the wool of sheep, and in South

America, and even as far north as Kansas, the larvæ of the screw-worm fly and of some other of this species infest man, the former living in the nasal fossae and causing great suffering. But *Lucilia caesar* is not as obnoxious to man as many flies, as it rarely comes into their houses. It is frequently seen resting on the upper side of the leaves of low bushes in the sunshine, and on the under side of the leaves or on the stems on damp or cold days. But although it lives on decaying animal and vegetable matter and its habits are similar to those of the house-fly, it is probably not as harmful to man.

A FATAL DISEASE SUPPOSED TO BE TRANSMITTED BY INSECTS.—An announcement of the discovery of what is thought to be the specific germ that causes infantile paralysis was made last night at a special meeting of the College of Physicians, called to discuss this important subject. Coupled with this announcement was the statement that the discovery may evolve a treatment that will successfully combat the disease.

Dr. Allen J. Smith, dean of the medical school and director of the school of tropical medicine, of the University of Pennsylvania, stated that in the blood of some of the cases of infantile paralysis examined in the laboratories of the state department of health small protozoa, a low form of animal life were found scattered among the red corpuscles.

They were only found in the blood of patients suffering from this disease, he said, and resemble the germ that causes sleeping sickness. He further said that his investigations led him to believe that the germ causing the disease is probably transmitted by insects, and that the disease might be eliminated in the same manner as typhoid fever and malaria have been checked.

Doctor Smith told of examinations of the various organs of those who died from this disease. While many authorities have stated that infantile paralysis had certain characteristics of rabies, Doctor Smith said that, on examination of the brain, he was unable to find any of the negri bodies usually found in sufferers from rabies.

He then went on to say that scattered through the blood of some of these cases small germs belonging to the animal, rather than the vegetable, kingdom were found. He made a chart on the blackboard, drawing in the corpuscles and the newly discovered protozoa. Because no one else has found them in the blood, Doctor Smith said that he was not absolutely certain yet that they were the germ that caused the disease, but pointed out their similarity to the germ of sleeping sickness.—"The North American," Philadelphia, October 13th.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest ..s readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

TO CONTRIBUTORS.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., NOVEMBER, 1910.

Dr. Joseph S. Neff, Director of the Department of Public Health and Charities of the City of Philadelphia, gives the following directions in regard to house flies, which we quote from a Newspaper article:

"The advice of the Department, to select most carefully the dealers in food supplies from whom you buy, was followed out in part, for those dealers who kept their bread in paper bags, their poultry and meats free from flies by screen or paper, their berries, fruit and vegetables off the pavement where dogs and other animals could not molest them and where they were free from the germ-laden dust of the streets, noticed this year a marked increase in their business. By next Spring it is planned to have at least one hygienic store in each locality, where the public appreciate the importance of cleanliness of their food suply. In this way the careless, slovenly dealers will be forced to eliminate dirt and infection or go out of business."

This is one method of attacking the house-fly problem and much can doubtless be accomplished in this way.

Now that people are gradually being educated along these lines, there are a number of them who will not resort to restaurants where the flies in their bare feet, are walking all over the food and suiciding in the soup and cream jug. Neither is it a pleasant idea to think of eating food, exposed on the street, and covered with dessicated horse-manure, dried sputum and other interesting street products. Of course the prevention of flies would be a more logical way to accomplish the object, but that desired end can only be brought about gradually, as the people awaken to the necessities of the case.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

FOLSOM'S "ENTOMOLOGY" has just appeared in a Japanese translation made by Professors Miyake and Uchida of Tokyo. We are glad to note the great appreciation of the entomological work done by Americans.

PROF. E. DWIGHT SANDERSON has been appointed Dean of the College of Agriculture of West Virginia, at Morgantown. He is the Business Manager of The Journal of Economic Entomology and all subscriptions and advertisements should be sent to his new address.

PONERA OPACICEPS IN COLORADO.—Last March my wife and I were rather surprised to find a Ponerine ant on Flagstaff mountain, Boulder, Colorado, this being the first member of the group observed in this region. Dr. Wheeler kindly determined it as *P. opacipes* Forel, new to Colorado, but common to Texas. The only *Ponera* Dr. Wheeler ever took in Colorado was a single example of *P. inexorata* Wheeler, near Colorado Springs.—T. D. A. COCKERELL.

A NEW HUMAN TRYPANOSOMIASIS CONVEYED BY INSECTS.—Dr. C. Chagas has an article, in German, on this topic, in the first volume of the *Memorias do Instituto Oswaldo Cruz*, Rio Janeiro, 1909, according to a note by Nathan Banks, in *Science* for July 1, 1910. "This disease is similar to the African sleeping sickness, and is considered to be transmitted by certain blood-sucking reduvids bugs, especially *Conorhinus megistus* Burm. A small species of monkey, *Callithrix penicillata*, is thought to be the reservoir of the disease."

Phalangium longipalpis, Weed, in New York:—This species was described by Weed from specimens collected in Arkansas. Since that time no further captures of this large and striking Phalangid have been recorded, except a single male taken at Carlton Station, N. Y., in July, 1906, and reported in the NEWS, XVIII, p. 161.

In September, 1909, I spent a week at a farm near Hamburg, N. Y. and was surprised to find this species abundant there on the trunks of fruit trees on the lawn. Males, females and young of various sizes were found. Again in September, 1910, I collected them in numbers at Plattsburg, N. Y., on the shore of Lake Champlain, where they were found under boards in a lumber yard and on the trunks of shade trees at the barracks. On September 16th, I collected an adult male on a tree trunk at Syracuse, N. Y., and on the 19th I found both sexes on fence posts at Stanley, Ontario Co., N. Y. In fact it has been the most abundant species collected during September.—C. R. CROSBY.

BOSTON SOCIETY OF NATURAL HISTORY.—MUSEUM EXPEDITIONS, 1910. —An intensive study of New England natural history brings to view the fact that comparatively little is known of the habits and local distribution of many of our plants and animals. The more thorough investigation of the New England area undertaken by the Society has already resulted in a great increase in our knowledge of the local flora and fauna, while the preservation and exhibition of the New England species in the Society's Museum becomes in itself a unique undertaking. The exploration of the more inaccessible portions of this area is a task requiring much effort and expense, but with the co-operation of friends and members of the Society it must eventually be accomplished. Thanks to a special appropriation by the Council, the Society was able the past summer to undertake several short collecting trips, a brief summary of which will be of interest.

Vermont is still in many ways the least known of the New England states from the naturalist's point of view. The first of the season's expeditions was therefore made to the region on the east side of Mt. Equinox (3,816 feet) in the southwestern part of the state. The Curator, C. W. Johnson, accompanied by Messrs. J. A. Cushman and G. M. Allen, spent a week in early June at Manchester on the eastern slope of the mountain. The native limestone, which is characteristic of the formation of this region, is here somewhat harder than it is farther south, so that many of the lime-loving plants found in the limestone area of western Massachusetts and Connecticut are here absent. The flora of the upland area above 2,500 feet on the mountain is strikingly different from the association of plants found in the valley and on the lower slopes, for Mt. Equinox is one of a number of isolated peaks in Vermont whose summits are sufficiently elevated to form boreal islands. In addition to a large collection of plants, a very interesting lot of insects, molluscs, and small mammals was obtained. The fact that the streams of this region are part of the Hudson Valley drainage area should make their further investigation of importance in view of the likelihood of finding species here that have come in from the western waters. Frequent rains hindered the work of collecting and made it impossible to continue the investigation to the other slopes of Mt. Equinox and the adjoining hills, of which little is as yet known.

During the last week in June, the Curator spent several days on Martha's Vineyard, collecting principally in the vicinity of Edgartown. Among the insects obtained here were a number representing typical austral species. It will be of importance to make further collections of plants and insects on this and other islands off our coast at various periods of the growing season.

In extension of his previous season's work in Maine, the Cura-

tor, C. W. Johnson, spent several days during the middle of August collecting insects at Fort Kent and vicinity, in the extreme north of the state, as well as a part of one day at Ashland Junction. The various collections made this season have added largely to the known distribution of many species of insects, besides adding many that were previously unrecorded for New England. A few of the species taken will doubtless prove to be new.

Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), excluding Arachnida and Myriapoda. Articles irrelevant to American entomology, unless treating of new genera, will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in Heavy-Faced Type refer to the journals, as numbered in the following list, in which the papers are published, and are all dated the current year unless otherwise noted. This (°) following a record, denotes that the paper in question contains description of a new genus; while this (*), that of a new North American form.

For complete record of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington.

1—Proceedings, Academy of Natural Sciences of Philadelphia. **2**—Transactions, American Entomological Society, Philadelphia. **4**—The Canadian Entomologist. **5**—Psyche, Cambridge, Mass. **7**—U. S. Department of Agriculture, Bureau of Entomology. **9**—The Entomologist, London. **11**—Annals and Magazines of Natural History, London. **12**—Comptes Rendus, L'Academie des Sciences, Paris. **14**—Proceedings, Zoological Society of London. **16**—Bulletin, Societe Nationale d'Acclimation de France, Paris. **18**—Ottawa Naturalist. **22**—Zoologischer Anzeiger, Leipzig. **24**—Berliner Entomologische Zeitschrift. **45**—Deutsche Entomologische Zeitschrift. **47**—The Zoologist, London. **49**—Annales historico-naturales Musei Nationalis Hungarici, Budapest. **50**—Proceedings, U. S. National Museum. **55**—Le Naturaliste, Paris. **74**—Naturwissenschaftliche Wochenschrift, Berlin. **81**—Biologisches Centralblatt, Erlangen. **84**—Entomologische Rundschau. **89**—Zoologische Jahrbucher, Jena. **92**—Zeitschrift fur wissenschaftliche Insektenbiologie, Berlin. **102**—Proceedings, Entomological Society of Washington. **119**—Archiv fur Naturgeschichte, Berlin. **153**—Bulletin, American Museum of Natural History, New York. **160**—Internationale Revue der Gesamten Hydrobiologie und Hydrographie, Leipzig. **175**—Aus der Natur, Berlin. **179**—Journal of Economic Entomology. **184**—Journal of Experimental Zoology, Philadelphia. **189**—Pomona Journal of Entomology, Claremont, Cala. **191**—Natur. Munchen.

193—Entomologische Blatter, Nurnberg. **196**—Arkiv for Zoologie, Stockholm. **197**—Proceedings, Royal Society, Biological Sciences, Series B, London. **198**—Biological Bulletin, Marine Biological Laboratory, Woods Hole, Mass. **200**—Bulletin Scientifique de la France et de la Belgique, Paris. **216**—Entomologische Zeitschrift, Stuttgart. **236**—Boletin, Sociedad Aragonesa de Ciencias Naturales, Zaragoza. **237**—University of Colorado Studies, Boulder. **240**—Maine Agricultural Experiment Station, Orono. **244**—Zeitschrift, Induktive Abstammungs und Vererbungslehre, Berlin. **253**—Archivum Zoologicum, Budapest. **258**—Mitteilungen, Zoologischen Museum in Berlin. **262**—Public Health and Marine-Hospital Service of the United States, Washington. **272**—Memorias, Real Academia de Ciencias y Artes de Barcelona. **273**—Proceedings, Royal Physical Society . . ., Edinburgh. **274**—Archiv fur Zellforschung, herausbegen von Dr. R. Goldschmidt, Leipzig. **275**—Philippine Journal of Science, General Biology, Manila. **276**—Bulletin, Societe lepidopterologijue de Geneve. **277**—Victorian Naturalist, Melbourne. **278**—Annales, Society Zoologique Suisse et du Museum d'Histoire de Geneve, Revue Suisse de Zoologie. **279**—Jenaische Zeitschrift fur Naturwissenschaft, Jena. **280**—Annals Transvaal Museum, Pretoria. **281**—Annals of Tropical Medicine and Parasitology, University of Liverpool, Series T. M. **282**—Abhandlungen der Naturhistorishen Gessellschaft zu Nurnberg. **283**—Bulletin, Societe Zoologique de France, Paris **284**—Bulletin, Museum National d'Histoire Naturelle, Reunion Mensuelle des Naturalistes du Museum, Paris. **285**—Natur-Study Review, Urbana, Illinois. **286**—Archiv fur Mikroskopische Anatomie und Entwicklungsgeschichte, Bonn. **287**—Proceedings, Royal Society of Victoria (new Series), Melbourne. **288**—Bulletin, Geological Society of America, Washington. **289**—Kansas University Science Bulletin, Lawrence. **290**—Biological Series, Michigan Geological and Biological Survey, Lansing.

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APTERA & NEUROPTERA. Banks, N.—New South American Neuropteroid insects, **102,** xii, 146-160 **Enderlein, G.**—Neue aussereuropaische Copeognathen, **22,** xxxvi, 161-169 (°). **Mitzman, M. B.**—A parasitic and predatory enemy of the flea, **262,** P. H. Rep., xxv, 393-397. General observations on the bionomics of the rodent and human fleas, **262,** P. H. Bul. 38, 34 pp. **Mjoberg, E.**—Studien ueber Mallophagen und Anopluren, **196,** vi, No. 13, 296 pp. (°). **Navas, R. P. L.**—Monografia de los Nemopteridos (Insectos Neuropteros) **272,** viii, 341-408 (°). **Neeracher, F.**—Die insektenfauna des Rheins und semer Zuflusse be basel. Faunistik. Biologie. Systematik, **278,** xviii, 497-589. **Okamoto, H.**—Die Caeciliiden Japans, **49,** viii, 183-212 (°). **Strough, H. B.**—The hackberry Psylla Pachypsylla celtidis-mammae. A study in comparative morphology, **289,** v, 121-165. **Waterston, J.**—On some habits and hosts of bird Ceratophylli taken in Scotland in 1909; with description of a new species (C. rothschildi), and records of various Siphonaptera, **273,** xviii, 73-91. **Wesenberg-Lund, C.**—Ueber die Biologie von Glyphotaelius punctatolineatus, nebst Bemerkung ueber das freilebende Pappen-stadium der Wasserinsekten, **160,** iii, 93-114.

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oogenesis, fertilization and cleavage of Coreid Hemiptera, **198,** xix, 79-126. **Patch, E. M.**—Gall aphids of the elm, **240,** Bul. No. 181, 193-240 (*). Four rare aphid genera from Maine, **240,** Bul. No. 182, 241-248. **Pierantonic, U.**—Ulteriori osservazioni sulla simbiosi ereditaria delgi O motteri, **22,** xxxvi, 96-111. **Reuter, O. M.**—Diagnoses praecursoriae miridarum divisionis Restheniaria, **49,** viii, 15-33, **Timberlake, P. H.**—Observations on the early stages of two Aphidiine parasites of Aphids, **5,** xvii, 125-130. **Ussing, H.**—Beitrage zur Biologie der Wasserwanze: Aphelocheirus montandoni, **160,** iii, 115-121.

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Doings of Societies.

A meeting of the American Entomological Society was held June 13, 1910. Dr. Calvert, President, in the chair. Ten persons were present.

Miss Hannah Thomas presented a large amount of North Carolina Lepidoptera in papers, collected by her brother, the late Lancaster Thomas.

Mr. E. T. Cresson, Jr., made a communication on a method of collecting Micro-Diptera.

Mr. G. M. Greene exhibited and presented to the collection, a pair of *Alaus oculatus* in coitu and explained his method of mounting them.

Dr. Castle exhibited a tick, *Dermacentor americanus,* taken from a woman's breast at Collingswood, New Jersey.

Dr. Calvert exhibited a box of Odonata, material studied for the Biologia Centrali-Americana and to be returned: The special method of labelling the specimens was shown. He also exhibited a nest of *Vespa vulgaris* and some of the wasps.

The President appointed the Secretary of the Society to represent it at the First International Entomological Congress and the Eighth International Zoological Congress.

Mr. J. A. G. Rehn and Prof. E. M. Ledyard were elected members.

HENRY SKINNER, *Secretary.*

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held September 22nd, 1910. In the absence of the Director and Vice-Director, Dr. Castle presided. Eleven persons were present.

Mr. Haimbach gave a talk on some of his observations while in Massachusetts this summer. He first exhibited a few specimens of *Perichymenobuis frustellus* he captured and made some remarks on its habits. He also exhibited a small nest of the white face hornet (*Vespa maculata*) in which he found a species of mud-dauber wasp, which Mr. Daecke thought was there merely by accident. Mr. Haimbach then gave an interesting account of his observation of the ravages of the Gypsy and Brown-tail moths, remarking upon the desolate appearance of the woods caused by these pests; there seemed to be no life of any kind except the caterpillar and moths. One afternoon he noticed a hollow maple trunk which was thickly lined inside with the moths, but next morning they had all gone. He said he was fortunate to be there during a great flight of the Brown-tail moth and gave an account of the flight, also of the "brown tail itch" caused by the irritation from the fine hair from these moths. A noticeable peculiarity of the Brown-tail is that it hibernates in the larval state, while the Gypsy moth hibernates in the egg state. He said he saw the ravages of the four principal pests, Leopard, Gypsy, Brown-tail-moths and Elm leaf beetle.

Mr. Ilg exhibited a mount showing the life history of *Ateva aurea* Mr. Daecke said that the species is more common west than here but he has collected it in New Jersey. This was followed by discussions by some of the members relative to the species.

Dr. Calvert showed a male of *Neurocordulia yamaskanensis* Provancher, taken by Mr. Daecke at Perdix, near Harrisburg, Pa., June 8, 1910, which is a new species for Pennsylvania, it having been originally described from Quebec.

Mr. Cresson exhibited some *Dermestes* larvae and imagos taken from a leather works in Camden, N. J., where it was doing much damage to the hides. There were three species

in the lot *Dermestes lardarius, cadaverinus* and *frischi*. He also exhibited a branch of a pine tree from the Academy's herbarium which was infested with some of the larvae. Mr. Cresson also spoke of the idea of having a local collection and asked for the help of the members in regard to donations. The subject was discussed by Mr. Daecke and others.

E. T. CRESSON, JR., *Recorder Pro Tempore.*

At a regular meeting of the Feldman Collecting Social held this evening, at 1523 S. 13th Street, thirteen members were present. President Harbeck in the chair.

Mr. Daecke exhibited five varieties of *Straussia*: v. *perfecta*, v. *longitudinalis*, v. *typica*, v. *vittigera* and v. *arculata*. Said he had found two varieties in copulation, so apparently each male takes a female of the same variety. A male *longitudinalis* was pointed out as very striking. A southern form of dragon-fly was also shown, *Heterina tricolor* Burm., a female from Camp Hill, Harrisburg, Pa., 9-5-09.

Dr. Castle detailed his trip to Georgia and Florida, telling of his disappointments due to wind and dry weather and exhibited the cone or seed cluster of the "coontie" (arrowhead plant) *Zania integrifola* Michx. from Miami, Fla., on which *Allocorynus slossoni* Schaeffer breeds, but could find no specimens of the weevil.

Mr. C. T. Greene exhibited and recorded the following Diptera: *Caenomyia ferruginea* Scopoli, Castle Rock, Pa., 5-29-10; *Ceria signifera* Loew, Germantown, Pa., 6-4-10; and *Criorhina notata* Wied., a male from Castle Rock, Pa., 5-29-10, all collected by himself.

Mr. Harbeck exhibited and recorded *Dasyllus champlaini* Walton, Browns Mills Junc., N. J., 7-10-06, and *Eclimus niger* Macquart, Manahaukin, N. J., 5-30-10.

Mr. Wenzel mentioned a trip to Rehoboth Beach, Del., saying how fine the vegetation was—it extends to the beach and is not gnarled and twisted like that of Jersey. He said the maritime flora is entirely absent.

Mr. Geo. M. Greene read extracts from back numbers of Entomological News in which is described the feeding of *Eudamus* and a *Pamphila* in the same manner that Mr. Daecke mentioned in last October meeting. Also an article on *Cryptorhynchus lapathi* Linn., corroborating Mr. Kaeber's statements of last two meetings. He exhibited the following Coleoptera collected by C. T. Greene: *Elater sayi* LeC., Roxborough, Pa., 4-23-10; *Sericosomus silaceus* Say., Wenonah, N. J., 5-15-10, Castle Rock, Pa., 5-29-10; and *Hormorus undulatus* Uhler, Castle Rock, Pa., 5-29-10 and 6-5-10.

GEO. M. GREENE, Secretary.

THE PACIFIC COAST ENTOMOLOGICAL SOCIETY.

The 33rd regular meeting was held on the evening of August 28th, 1909, at Thompson's Grill, San Francisco. President Van Dyke in the chair. Twelve members and five guests were present.

Mr. J. C. Huguenin reported the results of a collecting trip to the Santa Cruz Mountains.

Mr. F. X. Williams gave the results of last summer's work at Lake Tahoe.

Mr. Edw. Ehrhorn reported his summer's collecting and observations at Lake Tahoe; his description of collecting insects on the snow at Mt. Tallac was very interesting.

Mr. Leon Munier gave the results of his work at Glen Allen, Sonoma Co., California, in June. There was very little to be taken as a result of two bad seasons—the first cold and the second very hot and dry. He further made remarks upon a spider found on the street in San Francisco.

Mr. Fuchs talked on the meat gathering habits of certain wasps, as *Vespa occidentalis* or yellow jacket; also, of the insect gathering habits of others, with special reference to a large wasp that he observed attacking a *Mygale,* and which afterwards bit off the tarantulas legs.

Mr. G. R. Pilate discussed Mr. Fuchs' observations.

Mr. Fuchs then referred to studies on the maculation of *Hippodamia convergens,* the spots ranging from none to 12 and 22, with other variations.

Mr. F. W. Nunenmacher stated that at Cactus Springs, Nevada, there was a cliff 300 feet long, and that it was at the time of his visit there literally covered with *Hippodamia lecontei*; the whole country was red from the congregated Hippodamiae.

Mr. Wm. Mann, of Leland Stanford, Jr. University, made some very interesting remarks upon Myrmecophilus Coleoptera and other small insects.

Mr. E. J. Newcomer reported some data obtained at Lake Tahoe, California, these referred to Lepidoptera observed at the summit of mountains, while none were noticeable on the sides of the mountains.

Mr. Huguenin exhibited two boxes of Coleoptera.

Mr. Williams, Lepidoptera from vicinity of Lake Tahoe, California.

The 34th regular quarterly meeting was held at Thompson's Grill, O'Farrell St., San Francisco, on November 20th, 1909, President Van Dyke in the chair. Twelve members were present, also seven guests.

A communication from Mr. L. E. Ricksecker and a note on the Larva of Gloveria *medusa* Strecker were read.

Mr. Ralph Hopping made remarks on the habits of *Pleocoma frimbriata* and *behrensii.*

Mr. Chas. Fuchs gave a report of his work in the Entomological Department of the University of California, with an exhibition of the arrangement of the representatives of different orders of the Insecta.

Mr. Dudley Moulton gave an interesting talk on the work being done to suppress the pear Thrips.

The Society had the pleasure of Dr. Creighton Wellman's presence, who gave an account of his studies on the Meloidæ and his method of classification. The Doctor also

made remarks on collecting in Africa. Dr. Wellman also reported the death of Prof. Kraatz, a great authority on Coleoptera. At the request of the Doctor all the members arose to their feet as a token of esteem to Prof. Kraatz. The Secretary of the Society was instructed to write to Dr. Walter Horn, expressing the Society's sympathy to the Deutsches Entomologische Gesellschaft.

Mr. J. E. Cottle made remarks upon the depth of cabinet boxes.

Mr. Percy Baumberger exhibited a box of Hymenoptera.

Mr. Fuchs, a box of insects, it being No. 1 of a series that he was preparing for teaching purposes.

Mr. Cottle exhibited a specimen of *Pyrameis*, a sport of *carayae*, resembling *atlanta*.

The 35th regular quarterly meeting was held on the evening of February 19th, 1910, at Thompson's Grill, San Francisco, President Van Dyke in the chair. Thirteen members and four guests were present.

Dr. Creighton Wellman and Mr. Wm. Mann, were elected to membership.

Mr. J. E. Cottle and Mr. F. X. Williams reported collecting on Mt. Tamalpais at night; 120 moths came to the acetylene light.

Dr. Van Dyke gave an interesting talk on the results of his studies of the Coleoptera collected on the Galapagos Expedition.

Mr. F. W. Nunenmacher exhibited and made remarks on a *Zarhipis* larva.

Dr. Wellman stated that there was great danger in putting too much stress on characters specialized by atrophy.

Mr. F. X. Williams reported finding a Meloid larva in a Carpenter Bee's nest while on the Galapagos Expedition. Dr. Wellman said if it was so, it will be a *Horia*, and points to a more recent relation to the mainland.

Mr. Chas. Fuchs exhibited some Coleoptera from Mexico.

Dr. Van Dyke said that South America will prove to be one of the most interesting of all countries. It has many very primitive genera and species, and intermediate forms. *Parandra* was cited as an example.

Dr. Van Dyke spoke of the death of Mr. Kirkaldy, and the Society requested the Secretary to write and express its regrets and sympathy to Mrs. Kirkaldy.

F. E. BLAISDELL, Secretary.

Ier Congrès International D'Entomologie.

Bruxelles—1er-6 août 1910.

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Ball, F., Bruxelles.
Becker, Th., Liegnitz.
Bivort, A., Fleurus.
Blanchard, R., Paris.
Bondroit, Bruxelles.
Boone, A., Turnhout.
Bourgeois, J., St.-Marie aux-Mines.
Bouvier, E.-L., Paris.
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De Crombrugghe de Piquendaele (baron G.) Bruxelles.
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Hasebroek, K., Hambourg.
de Hennin Boussu-Walcourt (Dom) Maredsous.

L'asterisque (*) designe les membres a vie.

Hastert, P., Luxembourg.
de Hennin-Boussu-Walcourt Em. Bruxelles.
Hepburn (Sir. A. Buchan), Londres.
Holdhaus, K., Vienne.
Holland, W.-J., Pittsburgh.
Horn, W., Berlin.
Horvath, G., Budapest.
Howlett, J.-M., Pusa.
Imhof, O.-E., Windisch.
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Janet, A., Paris.
Jones, A.-H., Londres.
*Jordan, K., Tring.
Joseph, Edw.-G., Oxford.
Junk, W., Berlin.
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Kolbe, H., Berlin.
Kosminski, P., Moscou.
Künckel d'Herculais, J., Paris.
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*Rothschild (Hon. W.), Tring.
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Szilady, Z., Nagy Enyed.
Theobald, F., Wye.
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Tullgren, A., Experimentalfältet.
Van Biervliet, J., Bruxelles.

van Dissel, E.-D., Utrecht.
Vaughan-Williams, R., Londres.
Vermobel, V., Villefranche.
Veth, H.-J., La Haye.
Villeneuve, J., Rambouillet.
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Le nombre d'adhérents (Universités, Musées, Instituts, Sociétiés) est de 270, dont 24 membres à vie.—La liste complète paraîtra dans les comptes rendus du Congrèss.

OBITUARY.

ADOLPH CONRADI.

Adolph Conradi, a well known entomologist, died at his home in Bethlehem, Pennsylvania, on Aug. 4th, after a lingering illness of a complication of diseases. During his lifetime he gathered two collections of butterflies and other insects, one containing 35,000 specimens, and the other composed entirely of species of day-flying butterflies native to America and numbering many thousands.

Mr. Conradi was known to many collectors of the Lepidoptera and for many years carried on an extensive exchange correspondence. He was 72 years of age.

EXCHANGES.

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☞ These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Records of Hemiptera collected on Long Island desired (especially Homoptera, and will be received with much appreciation by C. E. Olsen, Jefferson Ave., Maspeth, L. I.

Wanted connections with reliable entomologists in California, Arizona and Florida for the intercourse of mutual assistance in experimental work with Heterocera and Rhopalocera.—Carlo Zeimet, 170 William Street, New York, P. O. Box 1613.

Cicindelidae for exchange. All are first class, fresh, in papers. Also have others in my collection.—Adolph Maresh, 2517 S. Homan Avenue, Chicago, Ill.

Wanted—Proc. Ent. Soc. Phila., Vol. ii; Trans. Am. Ent. Soc., Vol. iii; Experiment Station Record, Vol. iii, No. 4, and Vol. iv, No. 5; Bull. of Brooklyn Ent. Soc., Vol. iii. Will pay cash or exchange.—R. W. Harned, Agricultural College, Mississippi.

Wanted—Riley's 9th Mo. Report. Have Riley's 4th and the Supplement to 9th and index to the 9th Mo. Reports for sale.—E. O. G. Kelly, Wellington, Kansas.

Polyphylla variolosa offered in exchange—Have you fine specimens of this rare North American beetle in your collection? If not, send me a list of not over twenty rare species that you have to offer in exchange. My supply of specimens is limited.—Philip Laurent, 31 East Mt. Airy Ave., Philadelphia, Penna.

Coleoptera exchanged for native or exotic specimens new to my collection List on application.—Emil Liljeblad, 1018 Roscoe St., Chicago, Ill.

Wanted—All kinds of pupae and cocoons either for cash or good exchange.—Herman H. Brehme, 74 13th Ave., Newark, N. J.

Have for Exchange—Eggs of *Catocala innubens, cara, ilia, neogama, vidua, piatrix, scintillans* and pupae of *modesta* and other hawks and pupae of *ajax, cresphontes, luna* and others. Wish eggs or imagoes of *marmorata*, etc.—R. R. Rowley, Louisiana, Mo.

Imported Indian Cocoons of *atlas, mylitta, roylei, ricini, trifenestrata, selene, leto* and others, and hybrid *selene-luna* in papers for *regalis, versicolora* and other live native pupæ.—James L. Mitchell, 212 Indiana Trust Building, Indianapolis, Indiana.

North American and exotic Lepidoptera wanted. Will offer North American Coleoptera in exchange.—G. Chagnon, Post Office Box No. 186, Montreal, Canada.

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Diptera—Will give duplicates in exchange for identification.—A. J. Weidt, 439 Washington Street, Newark, N. J.

Duplicates—Fine *Parnassius* ex. Thian-Shan, Turkestan, including *romanovi, appolonius* and ab. *flavomaculata. Staudingeri nubilosus, intermedius*, etc.; rare Saturnids in paper as: *Philosamia, ricini, athæus, Edwardsi, atlas;* var. ex. *java: Arpema mimosæ; Actias selene; Antherea mylitta* and var. *sivalica; Nudaurelia menippe, ringleri, caffraria*, etc., and plenty of common species in papers and cocoons. Will take in exchange cocoons or moths of rare Saturnids or Parnassius; particularly want *Calleta, Colombia* cocoons.—J. Henry Watson, 70 Ashford Road, Withington, Manchester, England.

I have for exchange living pupae of *P. asterias, Sp. achemon, quinquemaculata, sexta, chersis, A. luna, A. myron, A. aurora, E. tityrus* and *octomaculata.* Want pupae of others not in my collection.—Joseph N. Lang, 619 Bunker St., Chicago, Ill.

Lepidoptera—I have for exchange living pupae of *Adelocephala bicolor, Sphinx jamaicensis;* also in papers, *Meganostoma coesonia, Apantesis virguncula* and *catocalae.*—James Tykal, 2807 Ridgeway Avenue, Chicago, Ill.

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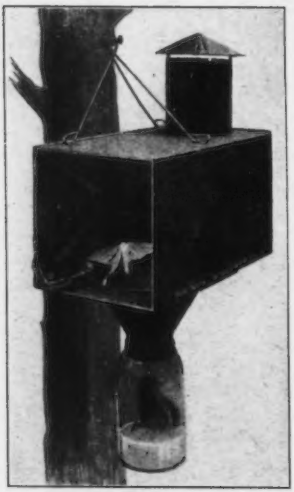

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